

Amendments to the Claims:

These claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) An apparatus for enhancing image quality of a previously coded digital video signal in a digital video system, said apparatus comprising:

a usefulness metric generator configured for generating a usefulness metric using coding information and scene content related information, the usefulness metric being utilized to determine an amount of video enhancement that can be applied to said previously coded digital video signal without enhancing coding artifacts.

2. (previously presented) The apparatus as claimed in Claim 1, further comprising:

at least one sharpness enhancement unit that is configured for applying a sharpness enhancement algorithm to said previously coded digital video signal, and

a coding gain control block configured for using said usefulness metric to determine an allowable amount of sharpness enhancement applied to said previously coded digital video signal by said at least one sharpness enhancement unit.

3. (currently amended) An apparatus for enhancing image quality of a previously coded digital video signal, the apparatus comprising:

a usefulness metric generator configured for generating a usefulness metric utilized to determine an amount of video enhancement that can be applied to the previously coded digital video signal without enhancing coding artifacts, said usefulness metric generator calculating, on a pixel by pixel basis, how much a pixel can be enhanced without increasing the coding artifacts.

4. (canceled)

5. (currently amended) The apparatus as claimed in Claim [[4]] 3, wherein a pixel coding gain ~~of a pixel~~ is determined by the equation:

$$g_{\text{coding}}(i,j) = \text{UME}(i,j) + g_{\text{edge}}(i,j)$$

and wherein i and j are pixel coordinates, g_{coding} is [[a]] the pixel coding gain, UME is a usefulness metric, and g_{edge} is based upon edge related information derived from an image.

6. (original) The apparatus as claimed in Claim 5 wherein a value for $g_{\text{edge}}(i,j)$ is calculated by setting the value of $g_{\text{edge}}(i,j)$ equal to (1) an experimentally determined value c for an edge pixel $p(i,j)$ at a spatial location (i,j) , and to (2) a value of one half of c for a pixel $p(i-1,j)$ at a spatial location $(i-1,j)$ and for a pixel $p(i+1,j)$ at a spatial location $(i+1,j)$, and to (3) a value of one fourth of c for a pixel $p(i-2,j)$ at a spatial location $(i-2,j)$ and for a pixel $p(i+2,j)$ at a spatial location $(i+2,j)$, and to (4) a value of zero for all other pixels.

7. (currently amended) The apparatus as claimed in Claim [[1]] 3, wherein said usefulness metric generator utilizes ~~only the~~ coding information to generate said usefulness metric.

8. (canceled)

9. (Currently Amended) A digital video system comprising an apparatus for enhancing image quality of a previously coded digital video signal in said digital video system, said apparatus comprising:

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a usefulness metric generator configured for generating a usefulness metric using coding information and scene content related information, the usefulness metric being utilized to determine an amount of video image enhancement that can be applied to said previously coded digital video signal without enhancing coding artifacts.

10. (previously presented) The digital video system as claimed in Claim 9, further comprising:

at least one sharpness enhancement unit that is configured for applying a sharpness enhancement algorithm to said previously coded digital video signal, and

a coding gain control block configured for using said usefulness metric to determine an allowable amount of sharpness enhancement applied to said previously coded digital video signal by said at least one sharpness enhancement unit.

11. (currently amended) A digital video system, comprising:

at least one sharpness enhancement unit configured for applying a sharpness enhancement algorithm to a previously coded digital video signal; and

an apparatus for enhancing image quality of the previously coded digital video signal in the digital video system, the apparatus ~~comprising:~~ including a usefulness metric generator configured for generating a usefulness metric utilized to determine an amount of video image enhancement that can be applied to the previously coded digital video signal without enhancing coding artifacts, said usefulness metric generator calculating, on a pixel by pixel basis, how much a pixel can be enhanced without increasing the coding artifacts.

12. (canceled)

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13. (currently amended) The digital video system as claimed in claim ~~[[12]]~~ 11, wherein a pixel coding gain of a pixel is determined by the equation:

$$g_{\text{coding}}(i,j) = \text{UME}(i,j) + g_{\text{edge}}(i,j)$$

and wherein i and j are pixel coordinates, g_{coding} is ~~[[a]]~~ the pixel coding gain, UME is a usefulness metric, and g_{edge} is based upon edge related information derived from an image.

14. (original) The digital video system as claimed in Claim 13 wherein a value for $g_{\text{edge}}(i,j)$ is calculated by setting the value of $g_{\text{edge}}(i,j)$ equal to (1) an experimentally determined value c for an edge pixel $p(i,j)$ at a spatial location (i,j) , and to (2) a value of one half of c for a pixel $p(i-1,j)$ at a spatial location $(i-1,j)$ and for a pixel $p(i+1,j)$ at a spatial location $(i+1,j)$, and to (3) a value of one fourth of c for a pixel $p(i-2,j)$ at a spatial location $(i-2,j)$ and for a pixel $p(i+2,j)$ at a spatial location $(i+2,j)$, and to (4) a value of zero for all other pixels.

15. (currently amended) The digital video system as claimed in Claim ~~[[9]]~~ 11, wherein said usefulness metric generator utilizes ~~only the coding information~~ to generate said usefulness metric.

16. (canceled)

17. (currently amended) A method for enhancing image quality of a previously coded digital video signal in a digital video system, said method comprising ~~the steps of:~~

generating a usefulness metric ~~in a usefulness metric generator~~ in said digital video system using coding information and scene content related information; and

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utilizing said usefulness metric to determine an amount of video image enhancement that can be applied to said previously coded digital video signal without enhancing artifacts.

18.(Currently Amended) The method as claimed in Claim 17, wherein said digital video system comprises:

at least one sharpness enhancement unit configured for applying a sharpness enhancement algorithm to said previously coded digital video signal, and
a coding gain control block configured for using the usefulness metric to determine an allowable amount of sharpness enhancement applied to said previously coded digital video signal by said at least one sharpness enhancement unit.

19. (currently amended) A method for enhancing image quality of a previously coded digital video signal in a digital video system, ~~the digital video system comprising at least one sharpness enhancement unit configured for applying a sharpness enhancement algorithm to the previously coded digital video signal,~~ the method comprising the steps of:

generating a usefulness metric ~~in a usefulness metric generator;~~

utilizing the usefulness metric to determine an amount of video image enhancement that can be applied to the previously coded digital video signal without enhancing coding artifacts by ~~utilizing the usefulness metric to determine an allowable amount of sharpness enhancement applied to the previously coded digital video signal by the at least one sharpness enhancement unit; wherein said at least one sharpness enhancement unit is an adaptive peaking unit; and~~

calculating, on a pixel by pixel basis, how much a pixel can be enhanced without increasing the coding artifacts.

20. (cancel)

21. (currently amended) The method as claimed in Claim [[20]] 19, wherein a pixel coding gain ~~of a pixel~~ is determined by the equation:

$$g_{\text{coding}}(i,j) = \text{UME}(i,j) + g_{\text{edge}}(i,j)$$

and wherein i and j are pixel coordinates, g_{coding} is [[a]] the pixel coding gain, UME is a usefulness metric, and g_{edge} is based upon edge related information derived from an image.

22. (Original) The method as claimed in Claim 21 wherein a value for $g_{\text{edge}}(i,j)$ is calculated by setting the value of $g_{\text{edge}}(i,j)$ equal to (1) an experimentally determined value c for an edge pixel $p(i,j)$ at a spatial location (i,j) , and to (2) a value of one half of c for a pixel $p(i-1,j)$ at a spatial location $(i-1,j)$ and for a pixel $p(i+1,j)$ at a spatial location $(i+1,j)$, and to (3) a value of one fourth of c for a pixel $p(i-2,j)$ at a spatial location $(i-2,j)$ and for a pixel $p(i+2,j)$ at a spatial location $(i+2,j)$, and to (4) a value of zero for all other pixels.

23. (currently amended) The method as claimed in Claim [[17]] 19, further comprising the ~~step of: utilizing only the coding information to generate said usefulness metric in said usefulness metric generator.~~

24. (cancel)

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25. (Previously Presented) The method of Claim 17, wherein the coding information comprises at least one of: a quantization step size, a macroblock type, and a forward motion vector.